MYRMECIA

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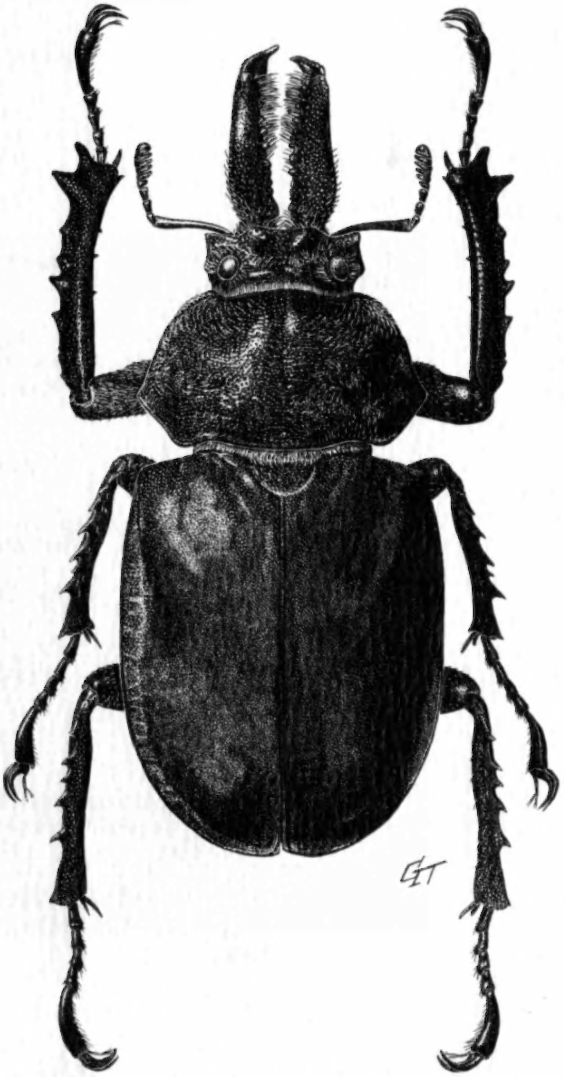

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THE COVER
Sphaenognathus (Australognathus) munchowae, a second Australian species of this Gondwanan Stag Beetle genus, recently described in the Memoirs of the Queensland Museum, by Barry Moore and Geoff Monteith. Illustration by Geoff Thompson, Queensland Museum.

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His Excellency, Major General Michael Jeffery AC CVO MC, Governor-General of the Commonwealth of Australia

SOCIETY SUSTAINING ASSOCIATES
Integrated Pest Management (Bugs for Bugs)

MYRMECIA

MYRMECIA WEB ADDRESS:

http://www.agric.nsw.gov.au/Hort/ascu/myrmecia/myrmecia.htm

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NOTICE

Statements made in *Myrmecia* do not necessarily represent the views of the Australian Entomological Society. Items printed herein should not be reproduced without permission of the author of the material.

COPY DEADLINE FOR SPECIAL ICE 2004 ISSUE

Material for the February 2005 should reach **Tish Silberbauer** at tsilberb@bio.mq.edu.au by **Friday 15th JANUARY 2005**.

Please submit text as .rtf files, and pictures as 300dpi .jpg files.

EDITORIAL

This is my first issue as editor of *Myrmecia* and, as such, I'm on a steep learning curve – not only the software used to produce the magazine, but also the unnoticed, but important details that keep the newsletter chugging along – like fitting in with the production schedule for the *Australian Journal of Entomology*. My predecessor, Laurence Mound, did a fabulous job of editing *Myrmecia* over 5 or so years and I'm sure I'm not alone in extending to him sincere thanks. I am also very grateful for all the help he has given me with this issue.

The Society has reason to be proud of Laurence Mound. The book, *Evolution of Ecological and Behavioural Diversity: Australian Acacia Thrips as Model Organisms*, written by Bernie Crespi, David Morris and Laurence Mound and published by ABRS and ANIC, recently won the Royal Zoological Society of NSW's Whitley Award for Best Evolutionary Text. A review of the book will be included in the next issue.

I was very pleased by the number of contributions submitted for the special ICE issue of *Myrmecia* – there is a lot of good entomology going on in Australia I would like to encourage everyone to consider continuing the good work and contributing a short piece to *Myrmecia* at least once a year. Contributions can go either to your regional councillor (list of names and contact details on the back cover of every issue), or come directly to me by email at tsilberb@bio.mq.edu.au.

There were a couple of articles that missed out on the special issue (entirely my fault – they were misplaced amongst the storm of paper). These articles are included in this issue.

Speaking of ICE – here are some of the statistics, courtesy of Myron:

2750 delegates from 85 countries,

1950 talks in 335 sessions, plus 900 posters,

Biggest scientific congress ever held in Brisbane.

The ICE website will have a downloadable pdf in html format of all abstracts "in a few weeks", plus a pdf list of all who attended. The ICE web site is at http://www.ccm.com.au/icoe/home/default.htm.

Congratulations to Marie Yee, PhD student in the CRC for Sustainable Production Forestry at the University of Tasmania. She was awarded the Australasian Section for the Society for Conservation

Biology prize for best student presentation on conservation. Her talk, presented at ICE, was titled "Why large logs support saproxylic beetles of conservation importance" and co-authored by S.J. Grove, A.M.M. Richardson, and C.L. Mohammed.

This is a time of change-over for the AES – not only of the newsletter, but also a new Executive. The new President is Ian Naumann, Vice President is Murray Fletcher, Secretary is Geoff Gurr, and Treasurer is Graham Thwaite. We also have several new regional councillors and a couple of new councillor vacancies (ACT and WA). I hope that someone amongst you is moved to volunteer as councillor for ACT or WA, else I will have to resort to unsubstantiated rumour and gossip for copy. In the mean time, if there is news coming out of either the ACT or WA, could folks please email it to me directly.

It is pleasing to see a large number of new members. I hope that they chose to renew membership when the year is up and continue their association with the Society.

For those of you who missed out on the AES merchandise sold at ICE, Jane Wright has set up the Australian Entomological Society Shop, which can be accessed via the web site (http://www.agric.nsw.gov.au/Hort/ascu/myrmecia/shop.htm). Details of items available, sizes, prices and ordering information can be found towards the back of this issue.

Anne Gaskett, a PhD student at Macquarie University, is seeking information about the parasitoid wasp, *Lissopimpla excelsa* (Ichneumonidae, Pimplinae). People are likely to be most familiar with the male and its pseudocopulation with Tongue Orchids, *Cryptostylis* spp. The female parasitises lepidopteran larvae. Anne is seeking known lepidopteran hosts that would be easy to care for in the lab until wasps hatch from the parasitised pupae, and information on exactly which stage the larvae are parasitised. If people can help, please contact Anne by email agaskett@bio.mq.edu.au, or by post - Anne Gaskett, Dept. Biological Sciences, Macquarie University, NSW 2109.

Tish SILBERBAUER

WELCOME TO NEW MEMBERS

Sarah Armitage, Highgate Hill QLD. Research assistant, Department of Zoology and Entomology

Kenneth Brash, Wombarra NSW. Director of Nordiko Quarantine Systems P/L and has invented a system to capture fumigant gases from shipping containers and render them harmless. Has also participated in a survey for the NSW Parks and Wildlife Service in Lithgow, on the relationship between the Bathurst Copper butterfly (*Paralucia spinifera*) which is endangered, and its attendant ant *Anonychomyrma*.

Christopher Carr, Tamworth NSW.

Ross Crozier, Townsville, Queensland

Andrea Canzano, Preston, Victoria

Isla Carswell, Carlingford, New South Wales

Hugh Dingle, Emeritus – UCDavis, St Lucia QLD (retired). The ecology, evolution and genetics of insect migration and life history syndromes. Two current projects are the influence of climate and related factors on Australian butterfly migration patterns and the contemporary evolution of Australian 'soapberry bugs' (*Leptocoris*: Hemiptera: Rhopalidae) on native and introduced host plants (Sapindaceae).

Geoff Eldridge, Noosa Heads, Queensland

Don Ewart, Research, Victoria

Ken Fairey, Revesby, NSW

Mary Finlay-Doney, Dept of Zoology and Entomology, SOLS, Uni. of Qld QLD Student. Interests: Ecological entomology and IPM

Frances FitzGibbon, Carwoola, New South Wales

Alena Glaister, Sherbrooke, Victoria

Rebecca Graham, South Perth, Western Australia

Mark Greco, Austral, New South Wales

Nadine Guthrie, Carine WA. Interests: Taxonomy and ecology of carabid beetles, ecology and biogeography of terrestrial invertebrates. Works for the Western Australian Department of Conservation and Land Management as an invertebrate taxonomist identifying terrestrial invertebrates as part of the Biodiversity Survey of the Pilbara Bioregion Project.

Sabrina Hall, Rockhampton, Queensland

Lynda Hamilton, Broken Hill NSW. Interests: insect vectors of disease. Studying entomology part time through the University of Queensland and would like to be a member of the AES to build networks and gain more knowledge and skills.

Nichola Hill, Seaforth, New South Wales

Anthony Hogan, Maryborough QLD

Lynita Howie, Coorparoo, Queensland

Michelle Larson, Hamilton, Queensland

Peter Leach, Aloomba, Queensland

Sue Marte, Young NSW

Andrew Mitchell, Orange, New South Wales.

Akihiro Nakamura, Hamilton, Queensland

John Oakeshott, CSIRO Entomology, Canberra ACT

Julie Old, North Ryde, New South Wales

Andrew Polaszek, Sevenoaks, U.K.

Champa Nirupa Rajapakse, St Lucia QLD. Used to work as a Research Officer in Entomology in Sri Lanka and is currently a full time PhD student in Entomology at the University of Queensland

Luke Rapley, Hobart, Tasmania

Andrew Ridley, Whiteside, Queensland
Raden R. Rukmowati Brotodjojo, Dept of Zoology and Entomology, Uni of QLD. Student
Robyn Russell, CSIRO Entomology, Canberra ACT
Shon Schooler, CSIRO Entomology, Long Pocket laboratories, Indooroopilly QLD. Interests: insect ecology, plant-insect interactions and the biological control of introduced invasive plants using host-specific insect herbivores.
Mark Schutze, Bardon, Queensland
Trudy Staines, CSIRO Entomology, Narrabri NSW.
Nigel Stork, Cairns, Queensland
Inger-Marie Vilcins, North Ryde, New South Wales
Susan Wright, Dayboro QLD.

NOTICES

John Jennings, the Chairman of the Council of Heads of Australian Entomological Collections (CHAEC) advises that there is a new url for CHAEC http://flyaqis.mov.vic.gov.au/chaec/index.html The site has been substantially updated, but CHEAC is seeking feedback from AES members on the website content.

OBITUARY

Elwood Curtin Zimmerman, AM, BSc (Berkeley), DIC, PhD, D.Sc (London) 1912 - 2004

Elwood Curtin "Zimmie" Zimmerman was born on 8 December 1912 in Spokane, Washington State, USA to Ethel Beatrice (Lingle) and Ernest William Zimmerman. He was named after his grandparents Walter Elwood Zimmerman and Andrew Curtin Lingle. When he was small the family moved to a more suitable climate at Oakland, California, where Zimmie went to school. In 1922, aged 10, he had a short story, "The Holdup", published and the following year won a prize for another short story, "Christmas Eve". He attended Elmhurst Junior High School, Oakland and graduated in June 1928. At graduation he was involved in a prophetic 'vision' of what students might do in the future. "Elwood Zimmerman, the great American Naturalist, was seen in the great frozen area of the South Pole. He was searching for a rare species of bug found only there". At Castlemont High School, from which he graduated in 1931, he became known as "Bugs" Zimmerman for his interest in entomology. In fact his enthusiasm for insects while still at High School led him to be employed by the Pacific Entomological Survey in 1930. The suggestion by a Berkeley University Professor, Edwin VanDyke, that he should study weevils set him on a course he was to follow for the rest of his life. His first scientific paper describing a new species of weevil he had collected as a Boy Scout was published in 1932.

Zimmie obtained a scholarship from the Oakland Scottish Rite Walter Scaife Scholarship Foundation to attend the University of California, Berkeley to study Agriculture and during the 1930's built his own laboratory at Oakland. His studies at University were interrupted when, due to his growing entomological reputation, he was selected for the position of Entomologist on the Hawaiian, Bishop Museum Mangarevan Expedition to some 50 Polynesian Islands. This expedition, led by C. Montague Cooke, had a profound effect on him; his interest in the Pacific never left him. His career as a professional entomologist, spanning 70 years, began in April 1934 when he boarded the expedition's "Islander" at Tahiti. The "Islander" was a converted Japanese sampan the " Myojia Maru". Zimmie had to be persuaded to board because of its rather primitive facilities.

Returning to University a year later he graduated in 1936 and gained a permanent position with the Bishop Museum in Hawaii as Assistant Entomologist. He soon commenced work on what he saw as his major project in life, to publish a series of volumes dealing with all the insects of Hawaii. He also lectured at the University of Hawaii in 1936 -7 and 1940 -1.

Whilst studying Hawaiian insect collections at Harvard for his project he met and married Hannah Louise Bond on 11 October 1941 at Newton Centre, Massachusetts. Hannah, born 22 July 1910 at Newton Centre, Massachusetts, was daughter of Hannah Frances (Shepherd) and Fred Darwin Bond. Zimmie and Hannah became inseparable.

By 1946 he had become Curator of Entomology and in 1948, having produced the first five volumes of "Insects of Hawaii" he gained a Fulbright Fellowship to study the Hawaiian insect collections at the British Museum of Natural History, where he became an Honorary Associate. He also served as Associate Entomologist for the Hawaiian Sugar Planters Experiment Station. For the next twenty years, as a Research Associate and Entomologist with the Bishop Museum, Zimmie spent much of his time in England working on his "Insects of Hawaii". He was a National Science Foundation Fellow 1954-6; 1958; 1966-7 and 1969-73. For his work, he received a DIC degree from the Imperial College, London and a Ph.D. from the University of London in 1956 and, in 1980, was awarded a DSc from London.

A paper in the Journal *Evolution* in 1958 on the

Hawaiian *Drosophila* resulted in the establishment of the Hawaiian *Drosophila* Research Project by the University of Hawaii and the Genetics Foundation at the University of Texas.

With a dedication that never faltered, Zimmie produced a further three volumes of "Insects of Hawaii" in 1957-8. However, due to financial and administrative problems his ninth volume, issued in two volumes, did not see the light of day until 1978. Despite the fact that he had already produced 4,893 pages in the nine volumes, it was to his permanent regret that the15 volumes he originally envisaged to complete his project never eventuated.

In 1972, with funds and support for his project all but gone, Zimmerman met with D.F. Waterhouse, the Chief of CSIRO's Division of Entomology in Canberra, and made a momentous decision. He would abandon the "Insects of Hawaii" and move to the other side of the Pacific and commence work on another incredibly ambitious project. At 60 years of age Zimmie settled in Australia to tackle the continent's vast and complex weevil fauna. As Senior Research Fellow with the CSIRO Division of Entomology in 1973 he set about his task with enthusiasm. However, the immensity of the project and the severe limitations that were to continually plague him soon became apparent. Zimmie would never refuse a reasonable request from others, and the demands on his time from other institutions to identify weevils from throughout the world seriously interfered with his work on the Australian weevils. Additionally, the Australian weevils were already proving to be far more complex than had hitherto been realised. One of his first reports stated: "The work load is staggering, and the difficulties facing us are almost overwhelming". That situation never changed. By 1977 Waterhouse wrote "that in spite of his prodigious energy, the completion of the work will take a further five years". In 1979 Zimmie hoped he could devote the remainder of his life, including 'retirement', to his weevil studies. In November 1982, aged 70, he advised Max Whitten, Chief of the Division that "I am not retiring. The fact that my salary ceases does not mean my work is completed – I have only just begun!". In 1986 he reported that he had "worked full time for the past year. No holidays were taken – neither Sundays nor Christmas. At my age one works continuously against time." As well as working on his Australian Weevil project Zimmie was still carrying out identifications for institutions throughout the world; work he felt he could not refuse.

As the first few volumes of "Australian Weevils" neared publication, to ensure they were produced in a manner he felt was appropriate, Zimmie contributed more than $100,000 towards their publication. Volumes 5 & 6 containing the coloured plates appeared in 1991-2, and volumes 1, 2 and 3 in 1993-4. With 225 scientific papers also to his name, Zimmie had produced more than 10,000 pages altogether, a world record for a single scientist. Volume 4 is currently in preparation.

Elwood "Zimmie" Zimmerman

Since his arrival in Australia and up to 1992 when he moved to his new home at Tura Beach, NSW, Zimmie successfully ran a small cattle property near Yass, NSW. This he ran "in his spare time"! He was an unstoppable workaholic. He was still actively working at his bench, examining specimens when, on 16 June, he collapsed with a stroke from which he never recovered. He died in the early hours of 18 June 2004.

On Wednesday 23 June 2004 "Zimmie" was buried at sea off the continental shelf in the Pacific ocean around which he had spent his entire professional life. There was no ceremony: He had, he claimed, come into the world quietly and that was the way he wished to leave it. He is survived by his wife, Hannah.

Elwood Curtin Zimmerman won the Hawaiian Author of the year prize in 1948; the Lepidopterist's Society Karl Jordan medal in 1983; a Special Award from the American Entomological Foundation in 1992, the CSIRO Special Medal in 1995; the Pacific Science

Association and Bishop Museum's Herbert Gregory Medal in 1995; a Commendation on behalf of the People of the State of Hawaii, and the University of Hawaii's Regent's Medal in 1998; also in 1998 Zimmie was awarded the Order of Australia (AM) for service to entomology, particularly through scientific research in Australia and the Pacific region and the philanthropic support of this research. In 2003 he was made an "Emeritus Fellow" of the CSIRO Division of Entomology for his significant contributions to science throughout his career.

Zimmie was an active member of many societies and associations: The Pacific Coast Entomological Society, San Francisco, since 1929. (Elected foreign Honoured Member 1993); American Association for the Advancement of Science, since 1940. (Elected Fellow 1951 & Life Fellow 1957); Hawaiian Entomological Society (Life membership 1987 and Lifetime Excellence Award 1995); Entomological Society of America (Elected a Fellow in August 1986 in recognition of his contributions to entomology); Hawaiian Botanical Society (Honour Award on its 50th Anniversary, 1974); Coleopterist's Society; Association of Tropical Biological research; Member of the Pacific Science Board of the U.S. National Research Council in 1950s; Society for Systematic Zoology; Society for the Study of Evolution; The Australian Entomological Society; and was Life Fellow of the Royal Entomological Society of London; Life Fellow of the Linnean Society of London; Life Fellow of the Zoological Society of London. He was a Patron of the California Academy of Science (Elected Honorary Fellow 1995).

In December 1990 Ernst Mayr wrote "For Zimmie, One of the few taxonomists left who appreciates the extreme importance of taxonomic monographs and does them superbly, In admiration and friendship and with thanks". Ernst Mayr 27 – 12 – 1990. Later, in 1998, E. O. Wilson wrote: "It is with pleasure to join the acclamation for Elwood C. Zimmerman, doyen of insect systematics and biogeography. His pioneering work on the Pacific fauna, especially the classic multivolumed 'Insects of Hawaii', laid the basis for the study of insect biodiversity and evolution in this part of the world. It was an important source of inspiration for my own research on Indo-Australian and Polynesian ant faunas in the 1950s and 1960s, and thence the origin of the theory of island biogeography. We who followed his footprints owe him a great debt".

Zimmie was certainly one of the greatest systematic biologists.

Murray S. UPTON

OBITUARY

Dan Smith 1944 - 2004

Dan was born near Glasgow in Scotland in December, 1944, and migrated to Australia with his parents when he was about five. He grew up on the family dairy farm near Malanda on the Atherton Tablelands, and graduated with a B.Sc. from the University of Queensland in 1967. In 1968 he commenced work with the DPI in the then Entomology Branch at Nambour being based initially at the town office. He moved to Maroochy Research Station when the general move to new offices was effected in 1983. Dan spent his entire professional career working from this centre.

Dan was a product of one of the best university Entomology Departments in the world at the time, and emerged with a broad knowledge of that subject and an enthusiasm to put that knowledge to work for the good of Queensland's horticultural industries. In an era when chemical pest control ruled, and critics looked sceptically at biological control and declared it would never work, Dan embarked on what turned out to be a revealing, often turbulent, but eventually triumphant journey of development, demonstration and implementation of an IPM system for Queensland citrus that is regarded as a spectacular success throughout the world. He was fortunate that, in those days, our management was by managers who had done their time in the field as entomologists, and knew both what was possible and what was required to do the job. While Dan became involved in many different projects, he is most famous for his work in citrus. The statistics and achievements of that citrus IPM research speak for themselves; they are best demonstrated by a brief description of how it all began, and its evolution.

The large number of potential pests of subtropical citrus in Australia (at least 100) caused early biocontrol researchers in CSIRO, DPI horticulturists, chemical company aficionados and growers in the early 1970s, to doubt that IPM could ever be made to work. In 1974, following the dramatic success by CSIRO entomologists in effecting the biocontrol of white wax scale (1969-72), Dan set to work in Queensland citrus. He reared, released and established in 50 citrus orchards in Southeast Queensland, *Aphytis holoxanthus*, a very effective parasite of circular black scale, and commenced studies on the biocontrol of red scale by *Aphytis lingnanensis*. Results with red scale were encouraging and he began the first innovative implementation of IPM on the Golden Mile Orchards at Mundubbera, under the sponsorship of the owner, the late Jack Parr. This was a major step, from small controlled studies on

research blocks to 400 ha of commercial orchard, with the fruit exported to Europe and Canada. The crop was being grown under the traditional heavy pesticide schedule, costing $0.5 million per year. The result, which is now history, was the implementation of a biologically based pest management system that resulted in a rapid reduction in pesticide use, a pesticide bill of less than $50,000 a year, and an improvement in fruit turn-out. The strategy included training a new, young entomologist by the name of Dan Papacek, and establishment of a four- room insectary producing 50 million red scale parasitoids per year. Thus began a system of monitoring and augmentative parasitoid releases that was unique to Australian citrus, not to mention the establishment of the necessary support in the form of what now is the 'Bugs for Bugs' insectary, and the associated crop monitoring skills. This allegiance between the two Dans played a major part in the development and evolution of the IPM system to what it is today. This story is nicely told in Dan Papacek's recently released DVD, 'Best Friends, Natural Enemies – 2nd Edition', which he has dedicated to the memory of Dan Smith.

The success at Golden Mile laid the foundation for the progressive convincing of other growers in the district of the value of IPM, so that 90% of the industry had adopted it over the next few years. Growers and researchers still did not fully trust in the capabilities of IPM, but gradually changed as more, effective biological controls were introduced for a range of scale insects and citrus leaf miner, and compatible pesticides were integrated. The 'Bugs for Bugs' insectary expanded, consultants were trained, and an effective collaboration amongst all parties flourished.

Citrus IPM is based on biological control. Seventy-five percent of Queensland's citrus pests are exotic, many of them scale insects that are excellent targets for classical biological control, each being attacked by specific parasitoids. Over 30 years, Dan conducted an innovative and vigorous programme, locating, introducing and host testing at least 34 natural enemies from overseas. Despite the proven track record of arthropod biocontrol agents, opposition to 'classical biocontrol' and the parasitoid introductions required to achieve that, increased after the 1970s, and the increasing demands for expensive host testing were a constant threat to Dan's progress. Nevertheless, his determination and persistence usually won out in the end, with many of his introductions benefiting not only the citrus industry, but also growers of back-yard fruit trees and ornamentals.

The implementation of IPM also involves the integration with biological controls, of selective pesticides for those pests for which effective natural controls do not exist. Dan, determined to make the whole system viable, tested and promoted the registration of practically every such pesticide that is currently used in Queensland citrus, especially avermectin and several insect growth regulators, and oils. Dan first promoted and developed protein bait sprays for fruit fly control in Queensland citrus in the early 1970s, to replace cover sprays of DDT. This technique is now widely used for fruit fly control in many other crops. Recently, he conducted extensive research to improve the efficacy and IPM compatibility of bait sprays, incorporating less disruptive insecticides. Dan was keen to share his experience and he helped interstate and overseas colleagues to embark on the IPM journey. In recent years, with the development of a new citrus industry on the Central Highlands at Emerald, Dan once more rose to the challenge to modify the IPM system to make it work in a different growing environment. In this, one of the major issues at Emerald was the disruption of the biological control agents by cotton spray drift.

Opposition to, and criticism of IPM was common during the 1970s and 1980s. Much of this came from the non-entomological fraternity within the DPI. Fortunately, we entomologists and especially Dan, knew we were onto something and ignored this. A comment Dan once made illustrates this view: "I recall giving a lecture on 'IPM Successes in Citrus', to the Australian Institute of Agricultural Science at UQ, St. Lucia in the early 1980s. In a comprehensive introduction to my talk, the chairman ridiculed my linking of the terms 'IPM' and 'success'." It's nice to know that Dan had the final laugh on that one, and many other similar issues!

Dan's expertise in the area of IPM and biocontrol was well recognized. He undertook six consultancies to Southeast Asia, advising on pest management in crops such as citrus, longan, mango, durian and coffee, and also participated in national and international symposia in Australia, Israel, Chile, Brazil and Florida. Such exposure lead to many entomologists from around the world visiting Maroochy to learn, discuss and often procure relevant parasitoids for use in their own programmes. The procession through Maroochy in the mid-1990s, of entomologists frantically collecting the parasitoids of citrus leaf miner that Dan had imported from SE Asia and successfully established in the field, epitomises the way in which he was able to accomplish things that others just talked about. The Australian citrus leafhopper, *Empoasca smithi*, was named in his honour. Fortunately, Dan's vast knowledge and experience was recorded in the landmark publication of 1997, 'Citrus pests and their natural enemies: Integrated pest management in Australia', published in collaboration with his many

local and interstate colleagues.
Dan was a great lover of nature, and he took real pleasure and pride in addressing a number of environmental issues relating to insect infestations. The Commonwealth Department of Environment, and the Queensland Parks and Wildlife Service engaged him and Dan Papacek to advise and consult for them on a scale problem that threatened the existence of *Pisonia* trees on islets off the coast near Gladstone, and in the Coral Sea. The introduction of appropriate biological controls remedied the problem within a few months. With his son, Nat, he also initiated the successful biological control of the planthopper, *Jamella australiae*, which was killing Pandanus palms in south Queensland in the mid-1990s, and he was always interested in protecting butterflies, especially the Richmond Birdwing.
Dan did not confine his crop research to citrus. Over the years he contributed significantly to pest management in other crops such as bananas, custard apples, passion fruit, papaws and mangoes. His achievements have resulted in recognition through promotion, and also in the award in 2000, of the Graham Gregory Medal, sponsored by Horticulture Australia Limited.
Anyone who knew Dan well will be familiar with his sense of humour (he was a big fan of Larson's 'The Far Side') and his 'can do' attitude, while constantly grumbling about management and the bureaucracy getting in his way. His passing has left a massive void for the citrus and other industries that he served, DPI&F, and entomology generally, to fill. Such depth of knowledge and experience does not come straight out of a university, and all sectors will be tested in the coming months in attempting to come to terms with their loss and plugging the gap. Dan was truly a unique personality and a giant in his profession.
But the greatest loss is to Dan's family, for whom he had great love and a never-ending sense of responsibility. He was a committed Christian and he and his wife Helen have five fine children, Nathanael, Matthew, Kirstine, Jonathan and Hannah. Three of them pursued tertiary qualifications in agricultural science and in doing so, were closely mentored by Dan. This relationship resulted in their publication of several joint papers.
To Dan's family, we offer our sincere condolences.

Geoff WAITE

OBITUARY

P.J.M. Greenslade, 1937 – 2003

With the recent death of John Greenslade, Australia lost one of its most original and independent ecological practitioners, a prominent expert on Australian ants and their ways, and a *bon vivant* of great intelligence, wit, good humour and hospitality.
John was born in Exeter, Devon, and raised in SW England. He was the oldest of 2 boys. His parents were schoolteachers and he was strongly influenced by his grandmother, who was an accomplished artist, and a bevy of maiden aunts, all teachers, who instilled in him an interest in gardening and wild nature. From them he also acquired a love of Dartmoor National Park, where he spent much time in childhood and as a youth, camping, collecting beetles, and studying the landscape, fauna and flora.
He published on Dartmoor beetles as a schoolboy, and his first major paper as an undergraduate discussed nearby Wistmans Wood, one of Britain's oldest Oak forests. He was educated at Sherborne School in Dorset, and was then already frequenting the halls of Entomology at the Natural History Museum, London, where his future CSIRO colleagues Ev Britton and Barry Moore encouraged his developing interests. John's artistic skill was sufficient that he had at this stage to decide whether to pursue architecture or science.
University life began at Caius College Cambridge, where John graduated BA (Natural Science) before studying entomology under O.W. Richards at the Silwood Park estate of the Imperial College of Science and Technology. He became closely associated there with the newly arrived lecturer Richard Southwood, who supervised his PhD research on behaviour and ecology of Carabidae, much of which was conducted on the Silwood site. John developed expertise in collecting methods for ecological research, and his work on pitfall trapping later provided the basis for a chapter in Southwood's well known text on ecological methodology. He is remembered from these days as a nattily dressed young man-about-town, who drove a Morris Mini Cooper sports car, which so frequently left the road at a nearby intersection that the site became known to generations of Silwood students as "Greenslade's Corner".
Like many new British graduates of his time, John was first employed by the UK Ministry of Overseas Development (MOD). He became an outstanding member of an accomplished group of young, dedicated and hard working Commonwealth entomologists. He was posted in 1961 to the other end of the world as Government Entomologist to The British Solomon Islands Protectorate based at Honiara, Guadalcanal. There he worked with islander assistants, including the frequently acknowledged Petero and his "biblical chaps" Isaiah, Ezekiel and Jeremiah, on major economic problems affecting copra production, including premature nut fall of coconuts due to *Amblypelta*, on

dynastid pests and on the leaf beetle *Promecotheca opacicollis*, a pest of cocoa.

John's abiding interest in ant ecology began here when his research developed cultural techniques to discourage ants favourable to *Amblypelta*, and to encourage its predators, *Oecophylla* and *Anoplolepis*, thus avoiding the economically and environmentally costly use of pesticides. This work included pioneering studies on the ecology of Solomon's ants. John travelled extensively in the Solomons and nearby islands, ever the observant biologist and insect collector. His shipments to taxonomists at the Natural History Museum and elsewhere were significant, and he later published several general papers from his 5 years in the Solomons on topics as wide-ranging as staphylinid taxonomy, the biogeography of birds, endemicity among the islands and the diminution of insect faunas from west to east across the archipelago. He was a focal member and organiser of the Royal Society biological collecting expedition of 1965 which included both terrestrial and marine personnel. Numerous Solomons and later Australian ants and other insect species have been named in recognition of his collecting prowess.

The wives and families of the far-flung MOD entomologists of the 60's deserve much credit. John's wife, Penelope, a fellow student of Cambridge days and a specialist on Collembola, was with him in the Solomons and the first of their children was born in Honiara . John and Penny eventually published a number of papers together, the first on soil and litter faunas in the Solomon Islands.

After a post-Solomons "writing-up" year in London, the family, now with two children (soon to be three), came to Australia in April 1968 to take up a position with CSIRO Soils Division at the Waite Institute, Adelaide, there to study the role of ants in soil processes. With typical insight and determination John quickly shifted interest to the role of soils on the distribution and biology of ants, and the ecology of ants in general, especially those of arid areas. This work focused partly on the various "meat ant" species of the *Iridomyrmex purpureus* group, the distributional, biological, ecological, evolutionary and taxonomic relationships of which were elucidated in several significant papers. John's student Bruce Halliday contributed importantly by analysing the genetics of the relevant taxa.

Throughout his further career John worked regularly in the field in South and Central Australia, and other localities, including surveys in sites in the Cooloola-Noosa area, Queensland; The Alligator Rivers region; Kunoth Paddock, Hamilton Downs, Northern Territory, and on Kangaroo Island. He processed and analysed hundreds of pit-fall trap samples at his main study sites, and generally throughout South Australia, eventually contributing much significant taxonomic material to the resources of the National Insect Collection. This work led to his production of a much used illustrated guide to the genera of South Australian ants. Other later collaborative studies included surveys of ants associated with termite mounds, and as food of the Echidna *Tachyglossis aculeatus*. He eventually published over 75 research papers.

Greenslade contributed significantly to ecological theory in his work on Adversity Selection and the Habitat Template. He was the first to develop important procedures for functional-group analysis of ant faunas which, despite his later scepticism regarding their facility, remain greatly influential in Australian ant ecological studies. He was particularly interested in the evolution and origins of the flora and fauna of arid central Australia, and organised and edited a major symposium on that subject. His influence was significant in all these areas.

John transferred to CSIRO Division of Soils Canberra laboratories in 1985, and retired in 1991. Shortly afterwards he moved to an idyllic spot overlooking D'Entrecasteau Channel south of Hobart. There he developed a fine garden, consciously modelling his life on his Devon experiences. His interest in the scientific world never abated, and he was ever ready with penetrating, usually humorous, comments on the continuing work of his old friends and younger associates. He is especially missed and fondly recalled by those of us who are members of that privileged group!

Robert W. TAYLOR

FROM THE WORLD OF INSECTS

The following is an excerpt from a handout prepared for Entomology 111: Insects and Human Affairs at the University of California/Davis.

I've never really understood that bit of folk doggerel that most of us learn as kids: "Ladybug, ladybug fly away home, your house is on fire, your children are burning."

For one thing it doesn't even rhyme; [The original English version "Ladybird, ladybird, fly away home, your house is on fire, your children are gone." does rhyme] Secondly, whoever heard of a ladybug house? As near as I can figure, the little ditty probably springs from the practice (still in use in many parts of the world) of setting agricultural fields afire to clear stubble and release nutrients bound in plant debris back into the soil (much the same function that termites serve in natural ecosystems)— when the fields were aflame the ladybugs' "homes" would be on fire, their offspring, lacking wings, like all immature

insects, would not be able to escape the blaze and would perish. Ladybugs, or more correctly lady beetles (order: Coleoptera family: Coccinellidae), have long been valued because they eat many common homopteran pests of garden and farm (like aphids and whiteflies). In fact, their name (originally "Our Lady's beetle") refers to the fact that they were once considered to have been sent in answer to prayers to the Virgin Mary to save crops from insect pests. The lady beetles' red pigmentation acts as warning coloration (or aposematism) and alerts animals that might eat them that they taste bad (due to the presence of the chemical precoccinelline). Mashed lady beetles were once prescribed as remedies for such diverse illnesses as colic, measles and toothache. Such remedies should not be scoffed at automatically since many insects produce chemicals that have legitimate uses as drugs. Ants were once the principal source of formic (from the Latin word for "ant") acid.

Richard J FAULDER

EXECUTIVE REPORT

March to October 2004

Vale: The Executive notes with regret the tragic passing of Dan Smith of Queensland in a swimming accident.

The transfer of the Executive from Melbourne to Orange has taken some time and is now nearly complete. We acknowledge the continuing support of the Melbourne Executive with a number of governance issues that may take some time to relocate.

125 strategic planning questionnaires were received by the deadline and have been put into a report by I. Endersby. Report will be sent to council, incoming executive and committee involved in drafting the questionnaire (A. Austin, P. Allen and J. Jennings).

Letters of appreciation were sent to retiring foundation members **Wendy Forno** and **Aleks Teraud** and to long term member, **Tom Bellas**.

Two AES members have been nominated for Gene Technology Advisory Committees and **James Ridsdill-Smith** has been invited to continue as the AES representative on the Plant and Animal Committee of the Academy of Sciences.

Treasurer is seeking advice about setting up an AES Trust that would allow for tax deductible gifts.

Analysis of impact factor of the Journal and actions for its improvement are in progress.

The Executive is pleased to announce that **John Mathiessen** has accepted the position of Chief Editor to replace **Peter Allsopp** at the end of this year. Peter has given many years of outstanding service to the Society as Chief Editor and has overseen the transition of the Society's flagship publication from "the red journal" to the current *Australian Journal of Entomology*. We are sure John will continue the high standard set by Peter.

The Executive is pleased to announce that **Andrew Mitchell** has been appointed to the position of Membership Secretary and will be responsible for maintaining the list of members, current addresses and other contact details. Please note that any change of address or other contact details can be sent to Mitchell at the Society's mailing address or to andrew.mitchell@dpi.nsw.gov.au. **Aaron Simmons**, Regional Councillor (NSW), has accepted the position of Minutes Secretary and will be responsible for maintaining records of Executive meetings.

ICE will provide a considerable boost to the Society's funds and the Executive is looking to use these funds to support promotion of Entomology in Australia and, in particular, education initiatives. An Education Committee is to be formed from among the University-based Society members to support the re-establishment of entomological education in universities and to encourage a greater use of entomology in high school biology programs. The Executive has agreed to support an initial meeting at University of Queensland in November to discuss new methods for delivering entomological education. The possibility of a cheap membership for high school students (receiving only *Myrmecia* electronically) is being considered.

Two books were donated to the Society by **Jan van der Linde** of Brill Academic Publishers. Details are available on the AES website under New Publications and the copies are available for loan through the library of the University of Sydney, Orange.

Information about Society items for sale has been posted onto the AES website (under Society Shop) along with photographs, ordering information and prices. All members are expected to purchase at least one item. **Jane Wright** has done an excellent job of organising these quality items. The robust entomologist is amply catered for by the range of sizes of polo shirts and collared sweatshirts.

The 2005 AES conference will be a combined effort with the Society of Australian Systematic Biologists and the 7th Invertebrate Biodiversity and Conservation Conference. The organising committee includes AES members David Yeates (chair) and Murray Fletcher. Details are available on the AES website under Meetings.

Murray FLETCHER

AUSTRALIAN POLLINATORS INITIATIVE

It is time that we establish an Australian Pollinators Initiative (AustPI). So far, with encouragement from The Convention for Biological Diversity COP (Decision VI/5), several nations have established their own Pollinators Initiative, e.g the European Pollinators Initiative; the African Pollinators Initiative; the International Centre for Integrated Mountain Development Initiative from South Asia; North American Pollinators Campaign; and the Brazilian Pollinators Initiative.

These Initiatives were established through a series of workshops and symposia that were sponsored by government and NGOs. We have been privileged in attending some of these meetings and can use this experience to establish an Australian Pollinators Initiative (AustPI).

The COP has established four key principles for the Conservation and Sustainable Use of Pollinators: 1. monitor pollinator decline, its causes and its impact on pollination services; 2. address the lack of taxonomic information on pollinators; 3. assess the economic value of pollination and the economic impact of the decline of pollination services; and 4. promote the conservation and the restoration and sustainable use of pollinators.

Pollination is an essential ecosystem service; more than 85% of the world's flowering plants and 80% of crop plant rely on animal pollinators for reproduction. We know very little about Australia's pollinators. We lack information about the distribution and ecology of pollinators (particularly insects), taxonomy of pollinators, whether or not they are in decline, the ecosystem services role of native and introduced pollinators, the economic value of pollination services by unmanaged pollinators, and the types of conservation challenges to be tackled. There is obviously much work to be done and the first step is to establish an AustPI. We intend to apply for a Fulbright symposium which would bring together international experts from Australia, Asia, the USA, South Africa, Brazil and the UK for 3 days in 2005. The symposium will allow an exchange of experiences, tools, plans and methodologies which will be used to draw up a coordinated action plan for AustPI, tailored to the Australian situation, to help to address some of the gaps in our knowledge. We are currently preparing this application and need your support.

Stage 1 – Getting AustPI established. We need support from individuals and organisations. We have tried the Federal Government, and whilst they are sympathetic to the cause, they are not able to put a Pollinators Initiative high on the agenda. This view may well change as a result of pressure from the national and international community in support an AustPI.

1. Commit yourself to an AustPI. Send an e-mail to cgross@une.edu.au to join a register of scientists, naturalists, NGOs, community groups. Tell us about your special interest and expertise with pollinators.
2. Help with cash donations to establish the first AustPI symposium, we hope that this request will fall favourably with the societies, notably the Australian Pollination Ecology Society, the botanical, entomological and other zoological societies, AussieBee, Apiarists, Botanic Gardens, philanthropic associations. Cash is not needed immediately, but by 01 June 2005. A cash-contribution pledge will strengthen any application.
3. Support could also come in the way of in-kind assistance, e.g. with publicity, with lobbying for money, with suggestions for sources of funding, with free access to databases, simply telling people about why an AustPI is important and why pollinators are important!

Stage 2 – Contributing to the AustPI symposium

1. Monitor pollinator decline, its causes and its impact on pollination services;
2. Participate in the symposium through sharing your expertise and taking on leadership roles in the many elements required in the actual delivery and implementation of the plan. With a solid plan, one that is internationally reviewed, we will be in a stronger position to apply for research funding to meet the research needs of understanding the taxonomy, ecology, economic value and conservation of pollinators in Australia.

What are we doing? We volunteer to coordinate and facilitate an AustPI., we are not owners of the initiative. We will establish the network, manage the web site, write grant applications, get the symposium happening and work to get our Government to recognise the importance of an AustPI. We welcome and need collaboration and support from colleagues and community groups with all of these aspects.

There is a famous phrase from Robert Browning's, One More Word, "Suddenly, as rare things will, it vanish'd". Increasingly we think that this applies to our pollinators, they were not rare 10-15 years ago but now we can't find them as easily. We need to organize this Pollinators Initiative now – please join us; your input and support is needed.

Caroline GROSS (cgross@une.edu.au)
Katja HOGENDOORN (Katja.Hogendoorn@adelaide.edu.au)

BOOK REVIEW

***Insect and Bird Interactions* Helmut F van Emden and Miriam Rothschild [eds]. xx+301pp; hard-cover; illustrated, colour photos, index. January 2004. US$154 (including postage & Packing). Intercept Ltd UK [e-mail: intercept@andover.co.uk]**

Nicely produced, well-bound, and with colour plates, this book is attractive to handle, and the title suggests that it must be of interest to most of us. Indeed, it is advertised as "An essential reference for entomologists, ornithologists and ecologists". However, a colleague from my youth would have described it, in his deceptively mild manner, as a "non-book". Not that it is a bad book! But essentially it is a Proceedings Volume plus a few additions, and it fails to cover the indicated subject.

The origins of the book were in a post-prandial discussion at the Entomological Club. This is the oldest entomological society in the world, being a dining club that first met in 1826 and retains its constitutional maximum of eight members. The dinner was presumably excellent, but the resultant book is less than satisfying. The provender is primarily ecological, the three major sections covering population management issues, effects of insecticides on bird populations, and foraging behaviour of birds on insects. These sections, representing 85% of the pages, are interesting and some certainly make the book worth looking into. A chapter by an ophthalmologist on the avian retina is particularly interesting for anyone considering how other organisms, including insects, perceive the world and each other. And a research group from Bristol University emphasise how irrelevant our own visual system can be when considering how birds perceive insects – that is, what wavelengths are reflected from different insects, and to what wavelengths are different bird species receptive. However, these three sections largely concern the impact of human behaviour, and particularly agricultural practices, on bird life. The fourth section of the book comprises three chapters, two concerning insects ectoparasitic on birds, and one on moth species that feed on bird detritus. The intriguing question as to how cuckoos acquire their host-specific lice is considered with great clarity, as is the range of methods used by birds to reduce their ectoparasitic load. But particularly interesting is an erudite chapter by Gaden Robinson examining the origin of keratin feeding amongst moth groups, including mapping caterpillar feeding preferences onto a Lepidoptera phylogeny.

So what is missing from this book? There are two notable lacunae – the scope in space, and the scope in time. The book is essentially Euro-centric. Most species of insects and of birds live in countries well south of Europe, but their many interactions find no mention. Apart from one general chapter on ectoparasites by two North American authors, and one chapter on cuckoo lice co-authored by a Japanese author, the sole contribution concerning southern hemisphere biota discusses the impact of insecticides on the Seychelles Robin. But of far greater importance to this reviewer is the lack of any evolutionary scenario. Dan Janzen observed some years ago that insects are the glue that holds ecosystems together. From that perspective one must ask to what extent are birds dependent on insects as food? Young crocodiles eat dragonfly nymphs, so insectivory presumably occurred amongst dinosaurs. But was it insectivory that permitted a marked radiation in bird species numbers, particularly amongst the passerines? I would have liked to see food preferences mapped onto an avian phylogeny, comparable to that given by Robinson for lepidopteran food preferences. Similarly, considering the vast amount of work on Darwin's Finches over the past 30 years, some account of the lice on this isolated, but evolutionarily dynamic, bird lineage would have been interesting.

The book thus fails to place insect/bird interactions into any general context, either their evolutionary origins or their current ecological diversity. Evolution helps us to think about where things might have come from, and where they might be going, and ecology helps us to consider how diversity is maintained. As a symposium organiser I know it is not always possible to ensure that a subject area is covered fully, but *caveat emptor* – as a book this one fails to live up to the breadth of its title.

Laurence MOUND

REGIONAL NEWS

NEW SOUTH WALES

Entomological Society of New South Wales Inc.

Highlights of the past few months include talks by **Annie Noack** (University of Sydney and Australian Museum) on the effects that thaumastocorid bugs are having on the eucalypt trees in suburban Sydney, and an historical wander through the taxonomy of the world's Bostricidae by **Graham Goodyer** (AQIS). We also had an evening of show and tell with a theme of wood destroying insects. Society President **Martin Horwood**, long-time Treasurer **Ted**

Taylor and Honorary Editor of General and Applied Entomology **Garry Levot** led the discussion with displays of disintegrated wooden sleepers and the insects therein, borer damage to *Acacia*, destroyed telegraph pole sections and an array of timber billets with characteristic insect damage.

Gith Strid, Ted Taylor, **Alan Westcott** and **Barbara May** represented the Society at the annual Ku-ring-gai Festival of Wildflowers at St Ives over the weekend of 28-29th August. The festival theme was 'Natural Places – threatened spaces'. This was the eighth year our society has participated in this festival and the second year in collaboration with the Society for Insect Studies.

Volume 33 of General and Applied Entomology was published in July and contained 11 original articles that varied in scope from a paper by **Dan Smith** *et al.* on the successful introduction of a biological control agent for green coffee scale, to a taxonomic revision of the genus *Horouta* (Hemiptera: Cicadellidae) by **Murray Fletcher**. Other papers dealt with mosquito trapping, *Carpophilus* beetle responses to fruit odours, effectiveness of a new cotton seed dressing, codling moth control, biological control of scales on *Pisonia* trees on Coral Sea cays, and a re-visit of the taxonomy of the psocopteran genus, *Howeanum*.

Garry LEVOT

NSW Agriculture

Gosford Horticultural Market Access Group

The Entomology Section of the Gosford Horticultural Market Access Group (previously known as the NSW Agriculture Postharvest Laboratory) has been researching new and improved postharvest disinfestation treatments for a range of fresh horticultural commodities since the 1960's. Export submissions, based on research and development carried out at Gosford and collaborating agencies, have been successful for market access of stone fruit and oranges to the US, citrus to Japan and Korea and others. Insects studied include Queensland fruit fly (*Bactrocera tryoni*, Froggatt), codling moth (*Cydia pomonella*, L.), light brown apple moth (*Epiphyas postvittana*, Walker) and Fuller's rose weevil (*Asynonychus cervinus*, Boheman). Postharvest treatments studied include chemical treatments (such as ethylene dibromide and methyl bromide), cold storage disinfestation, heat treatments, gamma irradiation and modified atmospheres.

Since the 1980's the Entomology Section has researched field control of Queensland fruit fly. It is the source for flies used in the Sterile Insect Release program currently under way in southern NSW, northern Victoria and eastern South Australia. We have developed methods used for sterile insect production, dyeing, packaging and transport methods. The laboratory has also researched mass-rearing of native and exotic fruit fly parasitoids for use in fruit fly management programs.

Since the 1990's the laboratory has been trialling new and improved methods of trapping and baiting for fruit fly monitoring and control. This research includes optimum male and female trapping techniques, reduction in toxicant concentration, most attractive trap colours, optimum placement of traps and baits in orchards or towns and testing new lures under Australian conditions.

Andrew JESSUP

Graham Thwaite retires

Having spent more than 37 years working with the major insect pests of apples and stone fruit, Graham Thwaite has decided it's time to fold up the hand lens and retire from NSW DPI.

Graham commenced as a trainee in 1967 and, following a few months in Sydney, was relocated to Bathurst Agricultural Research Station in 1968 where he embarked on his quest to develop an integrated approach to managing codling moth and mites. In 1980 he relocated to Orange and continued working in temperate fruit pests.

Graham commenced his career at a time when the impact of pesticide usage on the environment was first being observed and his guiding philosophy has always been to develop a safer environment for both human health and orchard ecosystems, as well as to reduce the risk of resistance developing in pests. He has made some notable contributions to helping fruit growers manage their pest complex better, such as developing IPM strategies for codling moth control. This included documenting the first instance of azinphos-methyl induced resistance, the practical implementation of pheromone traps and lures, the evaluation of "soft" chemical options such as IGRs, and the development of mating disruption.

Graham is acknowledged as being one of Australia's foremost authorities on codling moth control, evidenced by his acting as a consultant in the WA eradication programs during the 1990s. Graham's expertise is recognised internationally through being invited to co-chair the first ever codling moth symposium at ICE in Brazil 2000, as well as being invited to attend the International Atomic Energy Agency in Austria to discuss sterile insect treatments for codling moth. He has also been invited to speak at conferences in China, New Zealand, Italy, Switzerland, Germany, the USA and Canada.

He developed an integrated approach to mite control in orchards in response to his discovery of miticide

resistance in the 1980s and was responsible for overseeing the introduction of predatory mite species into control programs in NSW orchards. In addition to these pests, Graham has also been involved in researching San José scale, green peach aphid, woolly aphid, carpophilus beetle and oriental fruit moth. More recently, Graham has been developing IPM strategies for the prune industry with a different range of pest and disease problems, including fruit tree borer.

With more than 300 publications to his credit, Graham has contributed significantly to research journals, newsletter articles and grower publications as well as through presentations at grower meetings, workshops and conferences. Perhaps his greatest pride and joy has been editing the Orchard Plant Protection Guide, now in its 44th year of continuous publication.

Graham's contribution to the horticultural industries was recognised in his receipt of the prestigious Graham Gregory award in 2000 for excellence in horticultural research and development.

Graham will continue his connection with entomology through the University of Western Sydney, where he is a Research Fellow, and through his commitment to the Australian Entomological Society, where he has taken on the role of Treasurer for the next four years.

[This article has been modified by Murray Fletcher from an article entitled "Graham Thwaite: codling moth expert retires" written by Delia Dray and published in *Fruitwise* 54 (winter 2004): 4-5]

Murray J. FLETCHER

QUEENSLAND - NORTH

Department of Primary Industries and Fisheries - MAREEBA

Harry Fay was recently successful in gaining funds from RIRDC to assess pyrethrum for control of fruitspotting bugs in organic tropical fruit production. The project is also being supported by Botanical Resources Australia, the Tasmanian-based company representing the Australian pyrethrum industry, and the Organic Producers' Association of Queensland. Fruitspotting bugs are currently impossible to control effectively in organic systems, but pyrethrum has shown good activity against them. However, pyrethrum has broad-spectrum activity and will disrupt the natural enemies of a range of other pests if its use is not both limited and targeted. Its lack of persistence when exposed to sunlight and the need to replace PBO with plant-oil synergists will pose additional challenges for the project.

Harry Fay, **Bruno Pinese** (DPI&F Mareeba), **David Astridge** (DPI&F South Johnstone) and **Geoff Waite** (DPI&F Nambour), are about to become involved in an ACIAR project on 'Integrated pest management and supply chain improvement for mangoes in the Philippines and Australia'. In Australia, the IPM part of the project will have a particular focus on fruitspotting bugs, which can prove very damaging to mango crops when softer options are adopted for such pests as mango scale and fruit flies. The project team met recently in Brisbane to flesh out the last details prior to the project's review, taking advantage of the presence of the Philippine collaborators attending the International Congress of Entomology.

Keith Halfpapp recently celebrated 40 years with the Department. Keith has spent his entire working life on the Atherton Tableland, testament to both his endurance and the captivating nature of the region. Keith 'cut his teeth' with **Ian Cunningham** in tobacco, and after a brief sojourn in tropical rice, has spent the remainder of his time in both crop and ornamental horticulture dealing with all manner of pests. One of Keith's notable achievements has been the successful establishment of the parasitoid *Tetrastichus brontispae* for the palm leaf beetle, *Brontispa longissima*.

DPI&F, Northwatch, Cairns

Jane Royer has recently completed a mango leafhopper (*Idioscopus nitidulus* and *I.clypealis*) survey of the Atherton Tablelands and luckily no suspect specimens were found. The two species of introduced leafhopper are slowly spreading their way south through Cape York Peninsula, and were detected in August at Coen on a survey conducted by **Mark Stanaway** and **Bonny Vogelzang**. The Northwatch team also surveyed the Lockhart River area and the Peninsula Development Road in June with NAQS botanist **Barbara Waterhouse** on board to share her expertise and meet the NAQS survey targets. No mango leafhoppers were found on this trip, though *I.nitidulus* had previously been detected at Lockhart by NAQS.

DPI&F - South Johnstone

David Astridge has completed projects in bananas and rambutan, and is preparing for new ACIAR project developing IPM systems in mango (Australia/ Philippines). David is also preparing for new project in lychee, developing pest /beneficial monitoring systems and testing soft insecticide.

AQIS - CAIRNS

Jodie Cheesman and **Sarah Russell** visited the medical entomology team at Westmead Hospital, Sydney, to gain a better understanding of the *Aedes (Stegomyia) scutellaris* group of mosquitoes. The exotic *Aedes albopictus* (Asian Tiger Mosquito) was intercepted in water held in cavities of components of break bulk machinery imported from West Papua. *Anoplolepis gracilipes* (Crazy ant) was intercepted from at least five shipping containers ex West Papua in the last month. Tropical fire ant (*Solenopsis geminata*) was intercepted twice in the last month from pandanus mats ex Papua New Guinea. Jodie has been involved in delivering vector training to AQIS vector officers from around the country.

AQIS - MAREEBA

The team at NAQS Mareeba have been kept busy by the 'survey season' throughout one of our 'best' wet seasons for a number of years. The rains made the plants flourish and the insects responded magnificently! Since last reporting (in April) **Judy Grimshaw** and **Barbara Waterhouse** have completed another survey of Torres Strait islands (during which we found yet another small infestation of *Praxelis clematidea*, a weed that was accidentally transported from the mainland!), and of communities in the Northern Peninsula Area. We also assisted Queensland Parks and Wildlife Service with a weed survey of a small section of Cedar Bay National Park. It is surprising how many horticultural plants have persisted at the site of the former 'squatter camp'. This survey included a helicopter flight along the coast from Cairns, passing some stunning scenery, especially in the Daintree to Cedar Bay region! Barbara has recently returned from leading a NAQS survey into north-western PNG where the plant team spent most of the time working around Vanimo in Sandaun Province. Earlier in the year she also participated in collaborative AQIS/QDPI andF surveys in the Lockhart River and Weipa districts. During the latter she found the NAQS 'target' weed *Croton hirtus* at Scherger RAAF Base, a new record for Australia. The croton infestation is now being eradicated. As if work surveys were not enough, in July Barbara took leave to work as a volunteer to complete a weed survey of Niue. Niue is a small raised coral and limestone island east of Samoa that was devastated by cyclone Heta in January 2004. The cyclone caused severe damage to the vegetation (and infrastructure) of the island. Many of the native plants are recovering swiftly (as are the weeds such as mile-a-minute *Mikania micrantha*), but the abundance of insect life (especially moths and butterflies) was most notable. It seems that the insects are responding to the flush of new growth, and probably reduction of predator pressure because the bird population appears to have been affected by the cyclone.

The NAQS fruit fly monitoring and bait-spray program is in full preparation mode for the coming 2004/2005 season. Torres Strait officers are receiving refresher training in trap servicing, bait-spraying and equipment supplies are being stocked. Last season a total of 100 target specimens were trapped off-shore. In response to this, 35 extra traps were installed, officers weekly bait-sprayed a total of 4475 litres of spray on 11 islands in the Torres Strait and male annihilation blocks were installed by DPI&F staff on seven islands.

All of the entomology team at Mareeba (**Judy Grimshaw, Kerrie Huxham** and **Donna MacLeod**) attended the International Congress in Brisbane. It was a great conference and a big thanks to the organisers from us.

Kerrie HUXHAM

QUEENSLAND - SOUTH

University of Queensland

Sassan Asgari is studying ascoviruses, parasitoid secretions and host-parasitoid interactions and is interested in looking at the relationship between viruses such as ascoviruses and polydnaviruses and maternal secretions associated with parasitoid wasps; exploring their function in host-parasitoid interactions and insect immunity.

Steve Barker is interested in the molecular biology and evolution of arthropod disease-vectors; specifically in the biology and control of lice, the molecular evolution of mitochondrial genomes, and the phylogeny and evolution of lice and ticks. Students and postdocs in Steve's group use nucleotide sequences and rearrangements of genes in mitochondria to "build" evolutionary trees for ticks, lice and their relatives. Evolutionary trees constructed in this way have revolutionised our understanding of the evolution of parasites. We are also interested in resistance to pesticides in lice, fleas and ticks. We also study resistance to a range of pesticides, including synthetic pyrethroids and insect growth regulators. Some of the markets for these pesticides are large (e.g. > US $4 billion for cat flea control) so if we can delay the evolution of resistance to products, large financial gains will occur.

Mark Blows is interested in evolutionary quantitative genetics with his primary research focus is on the evolution of mate recognition in the *Drosophila serrata* species complex. Members of this species complex are found in rainforest along the east coast of Australia. Males and females use chemical

communication to choose mates and for species recognition. Mark uses a combination of techniques from experimental evolution, quantitative genetics and genomics to determine how mate recognition evolves under natural and sexual selection. More generally, he is interested in how genetic variances and covariances change under selection and different environmental conditions, and how multivariate quantitative genetics can be used to predict the direction of evolutionary responses in laboratory and field populations. People in his lab work on a variety of experimental systems, including *Drosophila*, birds, frogs, fish and humans.

Bronwen Cribb works on insect ultrastructure and chemoreception. This includes the distribution and innervation of antennal and mouthpart chemoreceptors and the use of sensory structures in orientation to and location of hosts or food sources. She is also interested in the structure and chemistry of insect cuticle, the ultrastructure, function and chemistry biological adhesives found in flatworms (*Monogenean monopisthocotyleans*), and the development, behaviour and management of Ceratopogonids (biting midges).

Paul Ebert researches the molecular mechanisms of oxidative stress toxicity and longevity. The fumigant, phosphine, disrupts oxidative metabolism, resulting in the production of reactive oxygen intermediates, causing premature ageing and death of targeted pests. Insect pests of stored grain in Australia now exhibit resistance to phosphine at levels more than 200 times the normal lethal dose. Paul is producing a genetic map of oxidative stress resistance genes. People in his lab are using genetic mapping to clone the genes responsible for phosphine resistance in the Lesser Grain Borer, and are also using functional genomics of the model organism, *C. elegans*, to understand the molecular basis of phosphine action. Their genetic studies have recently shown that resistance to phosphine is associated with an extension of lifespan.

Karyn Johnson is interested in positive-sense RNA viruses that infect invertebrates. Her research focuses on host-virus interactions, genomics, RNA replication and virus assembly. Other areas of interest include the potential uses of RNA viruses in biotechnology, biological control and plant protection.

Elizabeth McGraw studies insect evolution in response to microbial interactions. Her laboratory is interested in understanding the evolution of insect: microbe interactions from the perspective of the insect host. Their research focuses on the natural associations between *Drosophila* spp. and bacteria that range from pathogens to mutualists. Using a combination of molecular biology, genomics, and experimental approaches we examine the evolution of insect immune response and resistance to microbes, microbial invasion of insect cells, insect lifespan, and microbial populations of the insect gut.

David Merritt is interested in developmental biology and insect physiology. His major research program in developmental neurobiology is an analysis of genes involved in early development of the nervous system and in axonal pathfinding using embryos of *Drosophila melanogaster*. A current project is an investigation of the role of single sensory neurons in reflex circuitry of *Drosophila*. His work in insect physiology and development focuses on the interactions of larval *Trichogramma* parasitoid wasps inside their host eggs. His lab is also interested in the larvae of glow-worms (*Arachnocampa flava*), which bioluminesce to attract prey. The identity and distribution of Australia's glow-worms has been determined (**Claire Baker**, PhD project) and they are now focussing on how they regulate their light output. David is also interested in resilin, a cuticular rubber found in insects. In collaboration with **Chris Elvin** of CSIRO we have identified sites of resilin deposition in embryos, larvae and adults of *Drosophila*. Resilin gene orthologs are currently being isolated from the flea (it uses resilin pads to store energy for its prodigious leaps) and other insects.

Scott O'Neill researches the biology of bacterial parasites of invertebrates, focussing on the biology of *Wolbachia*, an inherited bacterial parasite of invertebrates. *Wolbachia* are capable of exerting profound effects on the hosts they infect such as inducing developmental defects like cytoplasmic incompatibility, inducing parthenogenetic development, overriding chromosomal sex determination, selectively killing males and even functioning as classical mutualists. His lab is interested in determining the molecular mechanisms by which these agents exert these effects. His lab is actively involved in a project to sequence the genomes of two *Wolbachia* strains: one from the insect host *Drosophila melanogaster* and the other from the nematode host *Brugia malayi*. They are in the process of preparing whole genome microarrays of *Wolbachia* for functional genomics studies seeking to better understand the molecular mechanisms underlying the *Wolbachia* / host interaction, and are also preparing physical maps of related *Wolbachia* strains for the same purpose. Some *Wolbachia* strains are known to drastically shorten adult lifespan. Scott and his group are interested in using these strains in different host backgrounds to investigate the evolution of virulence. In addition, these strains are being examined as a potential way to shift the age structure of insect populations and, as such, greatly reduce their ability to serve as

efficient vectors of disease. The ability to integrate foreign DNA into the *Wolbachia* chromosome will be central to future studies wishing to both understand *Wolbachia* function as well as utilize it as an applied tool, and Scott has a major program underway to develop transformation technologies for *Wolbachia*. Collaborative projects include *Wolbachia* and *Aedes albopictus* in Thailand and *Wolbachia* and Rice Stripe virus transmission in China

Margaret Schneider is interested in insect systematics, particularly the systematics of acalyptrate Diptera. Her current research project involves a revision of the Conopidae, a family of flies parasitic in wasps, bees and cockroaches. Many of the adults are excellent mimics of the wasps and bees they parasitise. A second research area involves the relationships between Australian native and exotic cockroaches and termites and their nematode and protozoan parasites. She has a long-term interest in the development of the University of Queensland Insect Collection. She is also investigating the identification, detection, and prevention of incursions of foreign insect pests through Australia's northern borders in association with the Northern Australian Quarantine Strategy. She has been involved with training programs for quarantine officers in Papua New Guinea, Indonesia and India.

Myron Zalucki, when not chairing organising committees for international conferences, researches insect abundance and distribution. He and his students work on various applied and basic research areas; generally taking an individuals-process based approach. They use various "model" systems to ask questions ranging from the effect of host chemistry on oviposition behaviour and early stage caterpillar survival, to the effects of learning on oviposition behaviour at a landscape level and the effects of climate on insect abundance. Myron prefers to work on butterfly-plant interactions, particularly monarchs and milkweeds, but a substantial amount of his applied research has been on the ecology and biology of *Helicoverpa* spp, the major pest of Australian field crops, and more recently diamondback moth, a key pest of horticulture.

Gimme Walter investigates host relationships of phytophagous insects (including crop pests), and the ecology of parasitoid wasps and rainforest insects. He and his associates approach ecological research as an interactive process between theory development and empirical investigation. He focuses on the ecological requirements of individuals and species (autecology) as a basis for understanding the distribution and abundance of organisms, and for interpreting local diversity (community structure). The specific problems tackled include the clarification of the host relationships of phytophagous insects (including crop pests), and the ecology of parasitoid wasps and rainforest insects (mainly drosophilid flies). Overall, these efforts have led to the first formalisation of the structure of autecology, an approach that is particularly important in applied entomology.

Dave MERRITT

Army Malaria Institute (AMI).

During August the Entomology group attended ICE 2004 in Brisbane, where **Steve Frances** and **Cassie Jansen** presented results of their studies. Visitors to the institute during this time were **Mustapha Debboun** and **Richard Johnson**, from the US Army, and **Kriangkrai Lerdthusnee** from AFRIMS, Bangkok, Thailand. Steve, Cassie and **Rob Marlow** also attended the 6th National Meeting of the Mosquito Control Association of Australia in Noosa during the week following ICE. Between mid September and late October, **Bob Cooper** and Rob Marlow travelled to Vietnam to continue fieldwork in central Vietnam. The AMI is involved in a long term study of malaria in Vietnam in collaboration with the Vietnamese Army. Since mid July **Nguyen Thi Hong Van** from the Department of Entomology, Military Institute of Hygiene and Epidemiology, Hanoi, has been working at AMI on mosquitoes collected during the collaborative studies in Vietnam. Van will return to Hanoi in late November.

Steve FRANCES

Queensland Department of Natural Resources, Mines and Energy
Alan Fletcher Research Station, Sherwood
Tropical Weeds Research Centre, Charters Towers and South Johnstone
Robert Wicks Pest Animal Research Centre, Inglewood and Toowoomba

Weed biological control: NRM&E (through its preceding departments) has a long-standing involvement in the biological control of weeds going back to its participation in the biological control of prickly pear as a part of the Commonwealth Prickly Pear Board in the early 1920s. The two scientists credited with the control of prickly pear, **Alan Dodds** and **John Mann**, were the first two directors of what became the Alan Fletcher Research Station. Since that initial success, NRM&E has been involved in research leading to the ongoing biological control of several tropical and subtropical weeds including, Harrisia cactus (*Harrisia martinii*), giant sensitive plant (*Mimosa pudica*), groundsel bush (*Baccharis halimifolia*) and rubber vine (*Cryptostegia grandiflora*). Weeds currently being targeted for biological

control by the department's research include lantana (*Lantana camara*), prickly acacia (*Acacia nilotica* ssp. *indica*), mother-of-millions (*Bryophyllum* spp.), cat's claw creeper (*Macfadyena unguis-cati*), giant rats tail grass (*Sporobolus* spp.), bellyache bush (*Jatropha gossypifolia*), and chromolaena (*Chromolaena odorata*). The group also maintains an interest in prospective and past projects such as Madeira vine (*Anredera cordifolia*), mistflower (*Ageratina riparia*), mesquite (*Prosopis* spp.), crofton weed (*Ageratina adenophora*), parkinsonia (*Parkinsonia aculeata*), annual ragweed (*Ambrosia artemisiifolia*), Noogoora burr (*Xanthium occidentale*), sicklepod (*Senna obtusifolia*) and parthenium (*Parthenium hysterophorus*).

The department has been actively involved in the exploration in the native range for biological control agents for many of the aforementioned weeds and has maintained field stations in the United States, Mexico, Brazil, Argentina, South Africa, Kenya, Madagascar and Pakistan. This has resulted in collaborative research with organizations in many of these countries and also with CSIRO and CAB International. The research of scientists in the department has contributed to biocontrol projects in various developing countries including India, Sri Lanka, Indonesia, East Timor, the Pacific Islands and Papua New Guinea.

Insect pest biological control: The NRM&E is one of the participants in the nationally coordinated locust research program, especially in the assessment of *Metarhizium anisopliae* var. *acridum* as a potential biocontrol of Australian plague locust.

Pest modeling: The dynamics of pest populations are being studied through simulation models. Models developed to date include effect of *Metarhizium* on migratory locusts; modelling the control of fire ants, evaluation of non-target risk assessment of rejected biocontrol agents and evaluating the effectiveness of released biocontrol insects on weed population dynamics.

Bill PALMER

Alan Fletcher Research Station, Sherwood

K. Dhileepan visited Rajasthan, Chattishgarh, Karnataka and Tamil Nadu States in India in May and July 2004 to survey prickly acacia (*Acacia nilotica* sub sp. *indica*) in its native range, and to establish collaborative research contacts with various research institutions there.

K. Dhileepan and **Andrew Manners** (UQ and AFRS) attended EPG Workshop and Training Course being conducted as a satellite event (10-13 August, 2004) before the International Congress of Entomology in Brisbane.

Andy Sheppard (CSIRO) and **S. Raghu** organised a symposium titled "Working at the interface of art and science: How best to select an agent for classical biological control", at the International Congress of Entomology. The proceedings of this session are being prepared as a special issue of Biological Control.

The following staff attended the XXII International Congress of Entomology held at Brisbane in August 2004: **Peter Mackey, Bill Palmer**, K. Dhileepan, **Michael Day**, S. Raghu, **Wilmot Senaratne, Mariano Trevino** and **Tanya Grimshaw**.

Les Ehler (UC Davis), **Kim Pullen** (CSIRO Canberra), **Armando Burgos-Solorio** (University of Morelos), **Thomas Le Bourgeois**, **Vincent Blanfort** (CIRAD, France), **K. P. Jayanth** (Pest Control India) and **R.W. Alexander Jesudasan** (Madras Christian College, India) visited the AFRS after the conference.

Rieks van Klinken (CSIRO) and S. Raghu ran a CRCAWM workshop on agent selection for classical weed biocontrol that was attended by some 25 CRC and non-CRC staff from all over Australia. This workshop served as a forum to discuss the CRC technical series document on the same theme.

Michael Day traveled to PNG in early August as part of an ACIAR-funded project on the biocontrol of chromolaena project. In PNG, the gallfly *Cecidochares connexa* is widespread and has now established in 10 of the 11 provinces where it has been released.

Bill Palmer and Michael Day attended the Fourteenth Australian Weeds Conference and the CRC Australian Weed Management (CRCAWM) meeting held at Wagga Wagga in September 2004.

Bill Palmer has been seconded to the Land Protection branch of the QDNRandM to work on the Biocontrol Act. K. Dhileepan has temporarily taken over the role of principal entomologist at AFRS.

Wendy Forno conducted a review on the Management of Biosecurity Risks associated with the Importation and Release of Biological Control Agents on 5th October 2007 at AFRS and **Peter Mackey**, Bill Palmer, K. Dhileepan and Michael Day attended the review.

The website is at http://nrm.dnr.qld.gov.au/science/research_stations.html.

K. DHILEEPAN

Queensland Institute of Medical Research

Given involvement in ICE and the Mosquito Control Association of Australia/ Arbovirus Research in Australia meeting the following week at Noosa Lakes Resort, the Mosquito Control Laboratory has been very busy. **Brian Kay** presently is taking his Australian Centre for International and Tropical Health

and Nutrition group (a joint UQ-QIMR consortium) through an Australian Government review and he and **Peter Ryan** are finalizing design details of a new AusAID grant for dengue control in 3 Mekong provinces of Vietnam, while finalizing evaluation of another dengue program in Cambodia. Not withstanding, **Ann-Marie Boyd** was awarded her PhD on 5 October, and both **Tim Hurst** and **Leon Hugo** are busily doing minor corrections to their PhD submissions. Under ARC Linkage grant funding, Leon will take up a 3 year appointment in **Scott O'Neill's** laboratory to continue our collaborative studies on better methodologies for age grading of important vectors.

Brian KAY

Department of Primary Industries and Fisheries
Horticulture and Forestry Science

Judy King, from Indooroopilly, spent October travelling - she at Awoonga Dam near Gladstone one week sampling ants for a study of changes in biodiversity of revegetated blue gum flats, and in Melbourne the following week for the National Sirex Coordination committee meeting and a visit to Museum Victoria to look at the ant collection.

Entomology staff at Maroochydore Research Station, Nambour were well represented at ICE. **Chris Freebairn** presented papers on citrus leafhopper, citrus leaf-eating weevil (co-authored by **Dan Smith**) and a phototour paper featuring images from the highly commended book *Citrus Pests and their Natural Enemies IPM in Australia* (of which Dan was the senior editor and for which Chris and Dan took most of the photos).

Dan gave papers on the importation and release of *Diversinervus stramineus* for green coffee scale (co-authored by Dan Papacek and Chris Neale), biocontrol of the pandanus flatid *Jamella australiae* (with his son **Nat Smith**) and co-authored a paper on biocontrol of *Pulvinaria urbicola* in *Pisonia grandis* forests in the Coral Sea (with **Dan Papacek**, **Mark Hallam** and another of Dan's sons **Jonathan**). Chris and Dan's photographs were also a feature of the DPI&F display which included several large posters of colourful insects and a powerpoint loop of ~ 270 images from the citrus pests book.

Geoff Waite co-authored a paper on fruit spotting bugs with **Chris Moore**, **Jeff Aldrich** and **A. Zhang** and played a significant role in organising the DPI&F display. The above indicates the entomological difficulty we now face since the untimely passing of Dan Smith - his are big shoes to fill.

Chris FREEBAIRN

Forest Entomology

Ross Wylie, **Mike Ramsden** and **Janet McDonald**, with assistance from **Simon Lawson**, **Manon Griffiths** and **Murdoch DeBaar**, hosted a six-day workshop as part of an ACIAR Pacific Forest Health Project. This project aims to address needs in the region for structured pest and disease surveillance in forest plantations and trees around ports as an insurance against damage by indigenous and exotic organisms. The purpose of the workshop was to consolidate earlier training, to collate the data and biological specimens collected and to discuss and disseminate findings. Collaborators in the project are Forestry Tasmania, CSIRO, and the Forestry organizations in Fiji, Vanuatu, Samoa and Tonga. The Forestry Heads from the Secretariat of the Pacific Communities and ACIAR attended the final stages of the workshop to observe progress and to provide input into a possible new project. The University of Queensland has recently awarded **Brenton Peters** his PhD. The title of his thesis is 'Xylophagous insects: developments in feeding assays'.

Brenton PETERS

Queensland University of Technology, School of Natural Resource Sciences

Entomology continues to grow at QUT, with the group working away at several different projects. Quarantine and biosecurity diagnostics work has received boosts with new projects from ACIAR. TaroPest, an information and diagnostics package for taro pests of the South Pacific, includes collaborators **Jacqui Wright** [SPC, Fiji] and **Roy Masamdu** [NAQIA, PNG], and DAFF/Office of the Chief Plant Protection Officer (Pest and Disease Image Library, collaborators **Glynn Maynard** [OCPPO], **Simon McKirdy** [Plant Health Australia], **Ken Walker** [Museum Victoria] and **Mike Grimm** [WADA]). The work will keep illustrator and Lucid wiz **Amy Carmichael** busy for a couple of years. Also working in the invasion biology area are PhD scholar **Eve White** and honors student **Nikki Sims**, both working on insect mediated, indirect interactions between fire-weed (*Senecio madagascariensis*) and native *Senecio lautus*. Nikki's honors results show that magpie moth, *Nyctemera amica*, much prefer to lay on the native and the larvae do much better on it: so in this case mother does know best.

Forestry work is progressing as the season begins, with post-doc **Helen Nahrung** and PhD scholars **Mark Schutze** and **Mike Duffy** all working on aspects of paropsine chrysomelids, particularly the infamous *Paropsis atomaria*. Helen and Mark both presented paropsine papers at ICE; Helen's from her PhD work at University of Tasmania and Mark

on work from the first 18 months of his project. Mike Duffy, a QUT honours graduate, started in the middle of the year and is working on an ARC-Linkage grant with **Simon Lawson** and DPI Forestry. The project is looking at *P. atomaria* natural enemies in SE Qld and their possible manipulation in young eucalypt plantations.

Also presenting at ICE was PhD scholar **Alexis Wilson**, who demonstrated that infestation with fruit fly larvae can actually increase seed germination and total plant fitness. She is currently writing this work up and we expect it to cause a few ruffles in the world of plant defense theory. Honors student **Andrew Hulthen** is keeping the fruit fly work ticking over, with some simple and elegant experiments on *B. tryoni* pupal ecology, an almost totally unworked (or at least unpublished) area of this major pest. Masters student **Brad McNeil**, working on his white-fly parasitoids with **Marc Coombs** and **Paul DeBarro**, continues to go through highs and lows. When he can keep feral parasitoids away from his white-fly cultures he is demonstrating that various putative nymphal defenses (exuviae stacks and waxes) do indeed keep some parasitoids way, unfortunately other parasitoids obviously less susceptible to these tricks keep coming in and causing colonies to crash. The joys of working with animals too small to see.

In addition to trying to keep vaguely on top of all of the above, **Tony Clarke** continues to work on the ACIAR Oribius project in PNG, while participation on a DAFF Standards Working Group has seen him in Canberra regularly through the year. The PNG connections will remain in place next year, with a 12 month extension of the *Oribius* project likely and two ACIAR Allwright Fellows to start in 2005: **Mark Ero** (NARI, KilaKila) and **Amanda Mararuai** (NARI, Keravat LAES). After 10 years of postdocs, Tony has finally received his tenure at QUT and promotion to Senior Lecturer. A 40th birthday party on the eve of the ICE was a nice way to start the ICE week and meant a number of interstate and international friends could attend.

Tony CLARKE

SOUTH AUSTRALIA

South Australian Research and Development Institute

The SARDI entomology unit was well represented at the XXII International Congress of Entomology. Oral presentations or posters were presented by **Angela Lush**, **Chris Krawec**, **Glenys Wood**, **Greg Baker**, **Nancy Schellhorn**, **Nancy Cunningham**, **Megan Leyson**, **Dijana Jevremov**, **Dennis Hopkins**, **Peter Taverner**, **Tony Burfield** and **Vanessa Bosco**.

At the end of October we sadly farewelled Nancy Schellhorn, principal investigator for the Diamondback Moth Project and the Revegetation by Design Project. Nancy has taken up an ecology position focusing on NRM and Agricultural Systems at CSIRO Entomology in Indooroopilly, Qld. One of the many outstanding achievements from Nancy's Diamondback moth work is her collaboration with **Andrew Hamilton** of DPI Victoria that has resulted in an innovative web based Brassica crop monitoring guide that incorporates sampling plans around a decision tree question and answer format. The industry now has access to, for the first time, a tool that produces personalised scouting thresholds for a grower's particular crop and growing circumstances.

Three different SARDI projects were represented by **Chris Krawec**, **Susan Ivory** and **Megan Leyson** at the Cleve Field Days, a major fixture on the agricultural calendar.

Bill Kimber has again commenced the summer round of Fire Ant surveys of high-risk sites. As SA representative, he attended and contributed to a workshop to develop a Threat Abatement Plan for Tramp Ant Species, convened in Canberra by **Dennis O'Dowd** of Monash University, participants included **Ian Naumann** of OCPPO, DAFF; **Simon O'Connor**, MAF Biosecurity NZ; **Cas Vanderwourde**, Fire Ant Control Centre QDPI; **Ben Hoffmann**, CSIRO, NT; **Bill Crowe** AQIS, Queensland; and numerous others. On an *ad hoc* basis, Bill is also assisting **Bob Heddle** of FMC with identification of *Myrmecia* species as part of his research into creating an anti-venine for *Myrmecia pilosula* stings.

Fruit fly research for **Cathy Smallridge** and **Vanessa Bosco** will shift to focus on Queensland fruit fly for next three years. As a kick off for the shift, Cathy and Vanessa visited **Andrew Jessup** (NSW Agriculture) in Gosford for a teleconference with US researcher **Don McInnis** discussing future collaborative research over the next year. The work will be carried out in both NSW (quality control tests) and SA (behavioural tests to improve outbreak release for any eradications). They also visited **Laura Jiang** (NSW Agriculture) in Menangle to discuss quality control and general technical processes in the fruit fly production facility.

South Australian Museum

Archie McArthur and others from the museum have been off to the north east of South Australia searching for the long tunnels in sandy soil in which *Camponotus terebrans* travels from its nest to a food tree.

University of Adelaide

John Jennings chaired the 15th Annual Meeting of the Council of Heads of Australian Entomological Collections held in Brisbane prior to ICE.

Nick Stevens from the University of Adelaide has started a Ph.D. with **Andy Austin** and John Jennings looking at the systematics of agathidine wasps (Hymenoptera: Braconidae) in the Australian region. Agathidine wasps are parasitoids of lepidopteran larvae from a broad range of families. The project is funded by the Australian Biological Resources Study (ABRS) in partnership with the University of Adelaide's School of Earth and Environmental Sciences. Agathidine specimens, mounted or otherwise, are required for morphological and molecular analyses. Most major insect collections have already been contacted regarding loaning specimens. However, there would be many researchers in Australia who have possibly collected agathidine wasps as a by-product of their projects, particularly if malaise trapping. Therefore, Nick requests any specimens people may have and are willing to send as a loan or to add to the Waite Insect and Nematode Collection (WINC). It is not expected that samples received will have to be identified to Agathidinae; identified to Hymenoptera would be fine. If people have bulk samples which have only had their group of interest extracted, so are largely unsorted, then please get in touch with Nick first to discuss the amount of material, and the nature of the sampling, involved. Specimens can be sent to Nick Stevens, Darling Bldg (DP 418), Centre for Evolutionary Biology and Biodiversity, School of Earth and Environmental Sciences, The University of Adelaide, North Terrace, Adelaide, 5005, South Australia. For further enquiries: nick.stevens@adelaide.edu.au. Any material sent will be greatly appreciated. You may even earn the honour of having a magnificent agathidine named after you. If you are curious about what distinguishes agathidine wasps from close relatives, Nick has posted a series of images with distinguishing characters on his web page: http://www.ees.adelaide.edu.au/people/enviro/nsteve01.html.

Glenys WOOD

TASMANIA

Forestry Tasmania

Two staff from Forestry Tasmania attended the ICE. **Simon Grove** co-convened a symposium on 'insect biodiversity and dead wood' and presented in the 'temperate canopy arthropods' symposium. Both were opportunities to showcase some of the on-going work on insect biodiversity and forest management in Tasmania's wet eucalypt forests. **Jane Elek** presented a paper on the implications of forest industry certification for insect pest management. Jane continues to investigate eucalypt defoliator pest management methods that may be acceptable to certification, including includes testing the more environmentally friendly insecticides on various pests, and testing alternative application methods such as trunk injections. Meanwhile, **Dick Bashford** attended the pre-ICE IUFRO conference on exotic insects in New Zealand, and presented the model for an integrated port/urban/forest insect monitoring system currently being developed in Tasmania. Dick has established a demonstration site for the early detection of exotic forest insects at Bell Bay in northern Tasmania. Sentinel tree plantings and static traps have been combined with the Asian gipsy moth and fruit fly monitoring schemes to produce an integrated detection system. Work on upgrading the Tasmanian Forest Insect Collection continues apace, with the help of **Belinda Yaxley** and **Sue Baker**. Meanwhile, conservation planner **Jeff Meggs** continues to advance the cause for invertebrate conservation in forestry with the publication of a joint paper in Biological Conservation on developing predictive models for the conservation of the threatened NE Tasmanian endemic Simsons stag beetle, *Hoplogonus simsoni*.

Queen Victoria Museum, Launceston

Brian Smith (curator, Zoology) writes: "Like all natural history museums, we try to divide our time between exhibitions and public programmes, curation and collection management and research. Again, like all museums, and especially smaller regional museums, we largely fail, but get to do some interesting stuff anyway. The large invertebrate exhibition, Up Close and Spineless, closed in September after being a popular attraction for over eight months. For the next year or so the only insects we will have on exhibition will be a series of drawers of mainly common, local insects in our children's gallery, Discovery Plus, and a few small displays in our "current topics" case, Noticing Nature. Collection management is perhaps our top priority at present as we try to make some progress with the large back-log of sorting and identification. The QVMAG has only a small pinned insect collection and we are just changing over to unit trays for most of this. By contrast, we have a large collection in alcohol, with major holdings of Tasmanian aquatic species and large collections of partially sorted pitfall material from forest and heathland surveys. This will be a major project for the next 12 months to greatly improve the level of identification in these holdings. Because of the amount of work in the areas,

research often gets pushed into the background. **Craig Reid** is continuing his work on the local ant fauna, and is amassing a comprehensive collection. **Lisa Boutin** is continuing her work on both local and New Caledonian spiders and her cooperative work on acrocerid flies. **Bob Mesibov** is still very active in the area of multipedes (see below) and Brian Smith is still looking at an occasional snail."

(Special Note to Interstate Entomologists: Why not plan a family holiday in Tasmania this summer? Plan a few extra days in Launceston to scan our wet collections. All bench facilities provided and specimens sent on loan for identification.)

Bob Mesibov writes: "I retired from part-time work at the Queen Victoria Museum and Art Gallery in January. In retirement I remain an Honorary Research Associate of the Museum and of the School of Zoology at the University of Tasmania. I've recently begun publishing a large backlog of taxonomic work on Tasmanian Polydesmida (flatback millipedes) and have now expanded my millipede universe to include Victoria. In company with an expert collector (my wife), I've so far sampled in the Otway Ranges; on Mt Cole, in the Wombat Forest and on Mt Macedon in the Midlands; and in the Strzelecki Ranges and the fringes of the Latrobe Valley. Several new genera and species have turned up; e.g., see *Mem. Mus. Vic.* 61(1): 41-45 (2004). The most interesting Victorian find so far was *Isocladosoma maculatum* Jeekel, 1984. This species had been described from specimens in the American Museum of Natural History in New York, provenance "Australia". Dutch myriapodologist C.A.W. Jeekel had guessed that *I. maculatum* was Victorian because (a) the only known congeners were from Victoria and (b) the collector was Melbourne-based naturalist Charles Barrett. *I. maculatum* was found alive and well near Noojee, north of Warragul."

Simon GROVE

VICTORIA

Entomological Society of Victoria Inc

In April 1927 a group of eleven men held the inaugural meeting in Melbourne of the 'Entomological Club' and appointed office bearers. They met regularly and held excursions and, in 1935 with a membership of 47, changed the name to The Entomological Society of Victoria. Poor attendances in 1942 due to members being on Active Service or engaged in war time occupations led to the Society going into recess.

In 1961, J.C. Le Souëf wrote to people who might be interested in re-forming the society and the first meeting was held on March 14th of that year. Initially the Society's newsletter was named 'Wings and Stings' but in 1972 it was changed to the 'Victorian Entomologist' to encourage members to publish field observations and to increase membership. Numbers have waxed and waned since those days and emphases have changed, but the society still arranges lecture meetings, excursions and publishes the Victorian Entomologist. Although there is a Conservation Committee is has been inactive for a number of years as no volunteers with that interest can be found.

Probably the largest project that the Society has tackled is the ENTRECS [entomological records] survey. In the late 1970s and 1980s butterfly distribution records were collected from throughout Victoria and mapped by hand. The results were published in a limited edition by the Society. Plans to expand the coverage to other groups did not eventuate except for two members' personal work on the Buprestidae. When collecting was a popular activity some members accrued large collections which have since been lodged with ANIC or the Museum of Victoria.

The Society presents the Le Souëf Award to amateur entomologists who have made an outstanding contribution to the pursuit and a number of well recognised names in Australian entomology have been the recipient. Normally the prize is a book suitable to the winner's particular interest but one recipient asked that his prize be used to encourage junior entomologists. For a while the society ran an essay competition for young people to decide the Junior Encouragement Award but in the last few years that money has been used to sponsor bursaries in the Science Talent Quest organised by the Science Teachers Association of Victoria.

To increase public awareness of entomology the Society offered an introductory course on insects to the Council for Adult Education to run over three evening lectures and a field excursion. From their very large mailing list only three people applied so the course did not proceed. Apparently the only type of nature education that Melbourne residents will now contemplate is a two hour wander through some bushland having things shown to them - perhaps a legacy of the National Parks "walk and gawk" approach. The preparation and extensive manual that was prepared for the course has not gone to waste as the course has been presented, in whole or in part, to other naturalist groups. Members of the Council have also prepared pamphlets and booklets on making an insect collection and on collecting and survey techniques. Work has also commenced on a CDROM of Victorian insect photographs, both

set specimens from the Museum's collection and habitus shots.

As another way to engage the public and perhaps gain new members, the Society took advantage of a free Yellow Pages listing. Amongst the plethora of early evening telemarketing calls occasionally one is truly insect related. Mothers have found us a valuable resource when working on their children's school projects and other callers have been disappointed to hear that we are not qualified to offer advice on pests. One of our few successes, after careful questioning, was to determine that small twigs of eucalypt dropping from trees were not caused by the lerp [psyllid] infestation but were probably due to cockatoos.

The nature of Society excursions has changed over the years. Initially they were arranged for members to add to their personal collections and the results were also written up for the newsletter so there is some interesting base line distribution data hidden within its pages. Of more recent times collections have been made under permit to survey national parks or other reserves and produce species' lists for use in management. These projects have only tackled taxa where members have expertise in identification so have generally been restricted to moths, beetles, butterflies and aquatic insects. Our most recent initiative is to survey a major campsite for the Scout Association and to leave on site a voucher collection to be used the Scouts during work on their environment badges.

The Entomological Society of Victoria Inc. has been an affiliated member of the Australian Entomological Society since the inception of that body and has a number of members who are common to both Societies. The common link is mainly the Victorian Entomologist which has a distribution list of about 120 including state and interstate members and institutions both within Australia and overseas. You can find out more on our website www.vicnet.net.au/~vicento.

Ian ENDERSBY

Primary Industries Research Victoria, Tatura, DPI, Victoria 3616, Australia.

Pheromone-based Integrated Pest Management strategies for pest control in Horticulture

Entomologists from the Department of Primary Industries (DPI) in Tatura demonstrated in their research projects that area-wide mating disruption (MD) strategy is very effective for pest control in orchards. An area-wide MD program in which all fruit varieties were treated with MD during two consecutive seasons in 1997-99 improved the protection of 40 contiguous orchards (1,100 ha) in the Cobram region of Northern Victoria (project leader . **A. Il'ichev**). This program reduced the numbers of oriental fruit moth (OFM) and fruit damage in high infested areas, restricted migration of OFM, prevented the edge damage common in smaller orchards treated with MD, and helped many growers to reduce the number of insecticide sprays. When the project finished in 1999, Cobram growers decided to continue the area-wide MD program by their own initiative in a self-sufficient community approach. The most significant achievement was that in 2002 all orchardists in the district joined forces and re-established area-wide MD program.

Entomologists from DPI established a project in OFM and codling moth (CM) hot spots in Greater Shepparton to help growers control both orchard pests in a more environmentally friendly manner (project leader . A. Il'ichev). The project applied MD in large replicated areas of orchards and assessed the effectiveness of the area-wide MD strategy to control OFM and CM hot spots. Comparison of the total moth catches and fruit damage over a three seasons from 2001 to 2004 demonstrated significant decrease in moths numbers and damage in the MD treated areas. The project demonstrated that area-wide MD can control designated hot spots, be cost effective, compared new formulations of MD products in replicated trials in Australia, and captured international research expertise with counter seasonal work in the USA where Michigan State University entomologists are developing new MD technology.

To maintain the pheromone-based IPM program in orchards and address the problem of secondary pest control, DPI entomologists established a project in 2002 to develop an aggregation pheromone-based mass trapping and attract-kill strategy for *Carpophilus* beetles (CB) control in stone fruit (project leader . **M. Hossain**). Also in 2002 was established the project addressing pheromone-based IPM control of *Helicoverpa* in fresh market tomatoes (project leader **C. Mansfield**).

Alex IL'ICHEV

WESTERN AUSTRALIA

Curtin University of Technology

Robert Dunn, latterly of the University of Connecticut, and now a Fulbright Postdoctoral Fellow in **Jonathan Majer's** lab, is developing a long-term project in collaboration with Jonathan, **Byron Lamont** and others to examine the importance of ant-mediated dispersal in shaping the patterns of biogeography and speciation of angiosperms in SW Australia and also more generally. Recently, the group received

a visit from **Terry McGlynn** of the University of San Diego, to discuss possible joint research ventures in Western Australia.

Melinda Moir's PhD project, which is studying the recolonisation of Hemiptera in Alcoa's bauxite mine rehabilitation in the south-west of Western Australia, is now in its later stages of being written up. **Aaron Gove** has been working in Veracruz Mexico studying ant conservation strategies outside nature reserves in the state's highly degraded seasonally dry woodlands. The main focus has been the ant community dynamics within isolated woodland trees. He is also in the latter stages of writing up his PhD. **Nihara Gunawardene** has recently received an overseas student scholarship to conduct a PhD through Curtin, but carried out in Sri Lanka. Nihara will be working in the Sinharaja Reserve on the effects of habitat fragmentation and/or habitat restoration on the forest ant fauna.

Karl Brennan has been funded by the Australian Centre for Mining Environmental Research (ACMER) to conduct a review of, and produce a manual on, minesite restoration techniques that can be used to encourage the return of fauna. Needless to say, this will contain a high invertebrate component. Also on the mining theme, **Peter Langelands** has been funded by the Argyle Diamond Mine to conduct a survey of termite species that have colonized a series on mines that have been rehabilitated at various intervals of time. Peter has just returned from Kununurra and is now wading through the material. Peter has also been examining spider recolonisation at the Black Swan Nickel Mine near Kalgoorlie. In his spare time he is busily writing up the results of his honours thesis for publication. He examined the long-term response of spiders to rainfall and fire in the Great Victoria Desert.

Gaynor Owen is sorting through the second lot of samples from Lorna Glen Station in the arid rangelands of central Western Australia. Her honours thesis is examining the spatial patterning of spider communities across the landscape with respect to land systems, soil type, floristics and fire history. Meanwhile, **Bernie Sloane** is busily reviewing what is known about Western Australian threatened spiders as part of his 3rd year thesis. **Shae Callan** is currently investigating the potential for invasion by Argentine ants and Big-headed ants (*Pheidole megacephala*) in Bold Park, a significant tract of bushland in the Metropolitan area. Shae has found both species in areas immediately adjacent to the Park, and is currently looking at their actual distribution and impact on native fauna and flora.

Meanwhile, Jonathan Majer just spends his days putting out bushfires (metaphorically).

Northern Australian Quarantine Strategy - Broome

Tony Postle wrote in with 'the entomological year has so far comprised the usual round of surveys, meetings and office work.'

Jonathan MAJER

CONFERENCES

XXII International Union of Forest Research Organizations (IUFRO) World Congress.

The Congress is being held from 8-13 August 2005, in Brisbane, Queensland, Australia. This event is hosted in Australia by the Queensland Department of Primary Industries and is supported by associated government bodies across Australia. A copy of the recently published information package is available from the congress website - www.iufro2005.com

The Congress is expected to attract over 2500 delegates, comprising the full range of international and domestic stakeholders concerned with forest and forest-related issues of a cultural, social, environmental or economic nature. This is the first IUFRO World Congress to be held in the Southern Hemisphere.

The theme for the 2005 Congress is Forests in the Balance: Linking Tradition and Technology. The scientific program for the Congress is presently under development and session submissions are being called. The program will also include In-Congress and Post-Congress tours that have technical and cultural components, high profile and authoritative daily keynote speakers, and a number of concurrent technical sessions each day. A poster display, along with trade and non-commercial booths will be a feature of the Congress.

XXII International Union of Forest Research Organizations (IUFRO) World Congress

8 - 13 August 2005, Brisbane, Queensland, Australia

For more information, please contact the congress managers: OzAccom Conference Services

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Order Forms. An order/tax invoice form can be downloaded from the society's website. Send your orders to Jane Wright by fax on (02) 6246 4094 or by mail to CSIRO Entomology, GPO Box 1700, Canberra, ACT 2601.

RECENTLY PUBLISHED

Systematics, Distribution and Diversity of the Australasian Doryctine Wasps (Hymenoptera, Braconidae, Doryctinae) by S.A. Belokobylskij, M. Iqbal and A.D. Austin
Records of the South Australian Museum Monograph Series No. 8, May 2004. $20.00

Other available monographs are:

(No. 1). 'A Catalogue of Australasian Monotremes and Marsupials and their Recorded Helminth Parasites' by D.M. Spratt, I. Beveridge and E.L. Walter, 1991. $10.00

(No. 2) 'Camaenid Land Snails from Southern and Eastern South Australia, Excluding Kangaroo Island' by A. Solem, 1992. $15.00

(No. 3) 'Review of the Recent Scleractinia (Stony Corals) of South Australia, Victoria and Tasmania' by S.D. Cairns and S.A. Parker, 1992. $10.00

(No. 4) 'Pelagic Amphipods (Crustacea: Amphipoda: Hyperiidea) Collected from Eastern and Southeastern Australian Waters by the CSIRO Research Vessel "Warreen" During the Years 1938-41' by W. Zeidler, 1998. $15.00

(No. 5) 'A Checklist of Helminth Parasites of Australian Reptiles' by S. Pichelin, P.M. Thomas and M.N. Hutchinson, 1999. $10.00

(No. 6) 'Systematics of the Wasp Genus Ceratobaeus Ashmead (Hymenoptera: Scelionidae) from Australasia: Parasitoids of Spider Eggs' by M. Iqbal and A.D. Austin, 2000. $15.00

(No. 7) 'Invertebrate Biodiversity and Conservation Special Issue' by A.D. Austin, D.A. Mackay and S.J.B. Cooper (editors), 2003. $40.00

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AUSTRALIAN ENTOMOLOGICAL SOCIETY INCORPORATED

I,
of
Being a member of the above-named Society, hereby appoint

of
as my proxy to vote for me on my behalf at the Council meetings to be held on the 16th day of August 2004 and the 20th day of August 2004 and the Annual General meeting of the Society to be held on the 17th day of August 2004 and at any adjournment thereof.
Signed this day of 2004.

(Signature)

AUSTRALIAN ENTOMOLOGICAL SOCIETY INCORPORATED
Nomination of Officer or Councillor

I nominate .....

For election to the office of
.....

Name of nominator .....

Signature .....

Date .....

I second this nomination

Name of seconder .....

Signature .....

Date .....

I accept this nomination*

Signature .....

Date .....

*The nominee is requested to attach a typed statement not exceeding 300 words, which includes the following: professional qualifications, address, institution, position held, fields of entomological interest, previous offices or appointments held in the Society; any other information which may be of assistance to members.

Please send all nominations to Nancy Endersby, DPI, Private Bag 15, FERNTREE GULLY DELIVERY CENTRE VIC 3156 before Tuesday 20th July 2004.

THE AUSTRALIAN ENTOMOLOGICAL SOCIETY INC.
NOMINATION FOR MEMBERSHIP

Please return to: Ms Nancy Endersby, AES Secretary, c/o Institute for Horticultural Development, Private Bag 15, Ferntree Gully Delivery Centre VIC 3156 AUSTRALIA

We, the undersigned

Proposer .....
(print name) (signature)

Seconder .....
(print name) (signature)

being financial members of the Society, propose the following for membership of the Australian Entomological Society Inc.

Title.....Initials.....Given name.....Family name.....

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Interests, experience and publications in entomology for publication in the News Bulletin *Myrmecia* (please attach brief resumé) .....

I accept nomination and undertake, if elected, to abide by the rules of the Society and to pay annual subscriptions by the date prescribed.

Signature ..... **Date**

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